

## **Advanced Bladder Materials for Inflatable Habitats**

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Description:

### **Lead Center:JSC**

This subtopic solicits advanced bladder materials for use in inflatable structures. Inflatable structures are a solution for increasing the volume and decreasing the weight and launch package for habitats, airlocks, and potentially other crewed vessels. Ideal bladder materials are low permeability gas barriers, durable over time, and do not degrade due to effects such as cold flow. Low permeability bladder materials that can withstand extreme cold temperatures (-90 °F), recover, and then deploy at low temperatures (-30 °F and -50 °F) while still maintaining low permeability rates (goal of 1.5 cc/100in<sup>2</sup>/day/atm), are of particular interest. Multi-functional materials (self-healing, flame resistant, puncture resistant...) are also of interest, however, cold flexure is of prime concern. The bladder materials should also be low mass (goal of